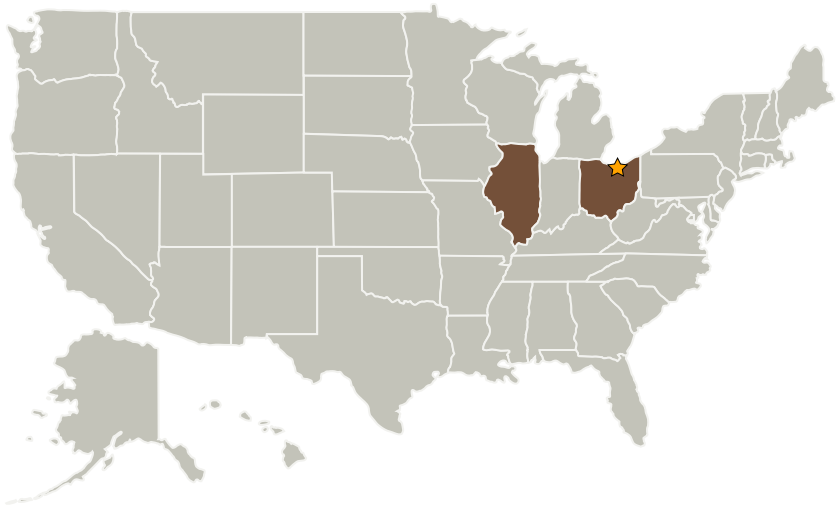
SiLix-C Nanocomposites for High Energy Density Li-ion Battery Anodes, Phase I

Completed Technology Project (2009 - 2009)

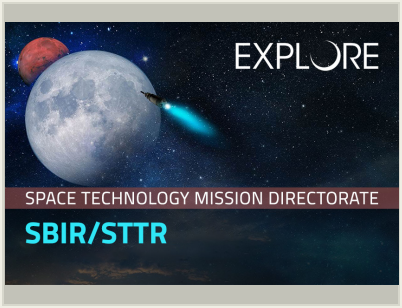
Project Introduction

For this project Superior Graphite Co. (Chicago, IL, USA), the leading worldwide industrial carbon manufacturer and the only large scale battery grade graphitic carbon producer in the USA, will develop, explore the properties of, and demonstrate the enhanced capabilities of novel nanostructured SiLix-C anodes, capable of retaining high capacity at a rapid 2 hour discharge rate and at 0oC when used in Li-ion batteries. We have already demonstrated advanced anode materials with the specific capacity of 600 mAh/g, minimal irreversible capacity losses and stable performance. We are confident that by the developing and applying a variety of novel nano-materials technologies, fine-tuning the properties of composite particles at the nanoscale, optimizing the composition of the anodes, and choosing appropriate electrolytes we will be able to revolutionize Li-ion battery technology. In order to achieve such a breakthrough in power characteristics of Li-ion batteries, the team will develop new nanostructured SiLix-C anode materials with dramatically improved capacity and stable cycling performance.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Superior Graphite Co.	Supporting Organization	Industry	Chicago, Illinois



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Illinois	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.6 Materials for Electrical Power Generation, Energy Storage, Power Distribution and Electrical Machines